Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION X
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 26-27. September 2022.

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Dear colleagues and friends,

We have great pleasure to welcome you to the Advanced Ceramic and Application X Conference organized by the Serbian Ceramic Society in cooperation with the Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral Materials and Institute for Testing of Materials. This Conference is dedicated to Prof. Dr. Vojislav Mitić, president of Serbian ceramic society, who passed away in September 2021.

It is nice to host you here in Belgrade in person. As you probably know, Serbia launched a vaccination campaign at the beginning of last year, so up to date more than 70 percent of the adult population has been vaccinated. Since there is no one statistic to compare the COVID19 outbreaks and fears for loved ones in different countries, we believe that we all suffer similarly during this pandemic. That is why we appreciate even more your positive attitude and readiness to travel in this uncertain time. We deeply hope that the ACA X Conference will be worth remembering, that you will respect all COVID-19 safety measures at SASA building, that you will have a nice time here and that ultimately you will return to your home safely. We are very proud that we succeeded in bringing the scientific community together again and fostering the networking and social interactions around an interesting program on emerging advanced ceramic topics. The chosen topics cover contributions from fundamental theoretical research in advanced ceramics, computer-aided design and modeling of new ceramics products, manufacturing of nano-ceramic devices, developing of multifunctional ceramic processing routes, etc.

Traditionally, ACA Conferences gather leading researchers, engineers, specialists, professors and PhD students trying to emphasize the key achievements which will enable the widespread use of the advanced ceramics products in the High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society was initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as the Serbian Ceramic Society in accordance with Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in South-East Europe, with members from more than 20 Institutes and Universities, active in 9 sessions. Part of our members are also members of the Serbian Chapter of ACerS since 2019. Their activities in the organization of this conference is highly recognized. To them and all of you thanks for being with us here at ACA X.

Dr. Nina Obradović
President of the Serbian Ceramic Society

Dr. Suzana Filipović
President of the General Assembly of the Serbian Ceramic Society

Conference Topics

- Basic Ceramic Science & Sintering
- Nano-, Opto- & Bio-ceramics
- Modeling & Simulation
- Glass and Electro Ceramics
- Electrochemistry & Catalysis
- Refractory, Cements & Clays
- Renewable Energy & Composites
- Amorphous & Magnetic Ceramics
- Heritage, Art & Design

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doped SnO_2 and TiO_2 nanocrystaline support materials were synthesized in ratio Ru/(Ru+M) = 1, (M = Sn, Ti). The nanostructured Pt catalyst was deposited subsequently on the surface of metal oxide support materials applying ethanol reduction reaction. The electron-microscopy imaging revealed uniform size distribution of the agglomerated support nanoparticles. X-ray powder diffraction analysis of both support materials revealed significant diffraction peaks broadening suggesting nanocrystalline nature of support materials. All diffraction peaks in XRD pattern of Ru-doped SnO_2 are indexed as cassiterite suggesting no secondary phases present in synthesized material. Ru-doped TiO_2 support synthesized using titanate nanotubes as precursor, was indexed as anatase phase with two low-intensity additional peaks corresponding to minor amount of un-reacted RuO_2 phase. The shift of diffraction peaks in XRD patterns of both Ru-doped SnO_2 and TiO_2 support materials indicates unit cell volume changes which are consistent with the incorporation of the Ru ion into SnO_2 and TiO_2 crystal lattices. The preliminary results of examination of the electrocatalytic activity toward ethanol oxidation under acidic conditions, showed better performance for Ru-doped TiO_2 support compared to Ru-doped SnO_2.

INV17

The Briggs-Rauscher oscillatory reaction method as a “fingerprint” for bentonite clays

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The oscillatory Briggs-Rauscher (BR) reaction was applied on solid insoluble materials - bentonite clays from different deposits: Wyoming (Swy-2), Texas (STx-1b), Idaho (SbId-1), Arizona (SAz-2), Bogovina and Mečji Do, last two from Serbia. Under the same BR experimental conditions, the addition of identical masses (0.25 g) of particular clay resulted in different effects on oscillatory dynamics. There is a prolongation, quenching, or no influence on oscillatory dynamics. Additionally, in the case of different masses of clay added, the response of the BR oscillating system resulted in a complex behavior pattern (oscillatory period vs. bentonite mass). This complex behavior pattern (firstly obtained by using clays in BR), could be applied as a fingerprint for bentonite identification. It is supported by facts that montmorillonite/beidellite ratio, cation exchange capacity, principal exchange cation, the extent of iron leaching in the acidic environment of BR reaction, and specific surface area of each used clays were *not* exclusively responsible for observed behavior in oscillatory reaction. This means that all bentonite’s properties combined are probably responsible for behavior obtained in oscillatory reaction, making BR reaction as an easily available and economical method for the identification of bentonite clay origin.